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A NEW SPECIES OF *DIGASTER* (MEGASCOLECIDAE: OLIGOCHAETA) FROM QUEENSLAND

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ABSTRACT

The new species, *Digaster gwongorellae*, is the ninth described species of a *lumbricoides* species-group within this endemic eastern Australian genus.

The endemic eastern Australian genus *Digaster* was the subject of a recent paper (Jamieson, 1971c) in which it was shown that the seven described digastric Queensland species and the type-species, *D. lumbricoides* Perrier, from New South Wales, were assignable to a homogeneous *lumbricoides* species-group. An eighth, then undescribed, Queensland species from Springbrook was included in the *lumbricoides* group and is described in the present account.

Digaster gwongorellae sp. nov.

(Fig. 1A–C)

Holotype: Gwongorella National Park, southeast Queensland, 153° 14′ East 28° 06′ South; elevation c. 950 metres; in rainforest soil under leaf litter, collector E. Bradbury, 10.iv.1970, QM. G6360.

Paratypes: 2, same data as holotype but collected 5.vi.1970; paratype 1, QM. G6361; paratype 2 in author's collections.

External Anatomy

The holotype (H) and paratype 1 (P1) are complete; paratype 2 (P2) is a posterior amputee. Length 70–102 mm, width (midclitellar) 4 mm; number of segments 150–152 (P1 and H, respectively).

Segments in the forebody weakly biannulate; no appreciable annulation more posteriorly. Slender, circular in cross section throughout. Prostomium tanylobous (H; P1, 2). First dorsal pore 5/6 faint; pores conspicuous from 6/7 (H; P2). Clitellum annular, XIV-XVIII; dorsal pores and intersegments (except ventrally) obliterated. Setae commencing on II; in 8 regular longitudinal rows throughout. Setae *a* and *b* absent in XVIII (H; P1, 2).

Male pores minute, equatorial in XVIII, in *b* lines, on very small, inconspicuous papillae which indent the lateral borders of a midventral unpaired flat-topped, subcircular moderately protuberant genital marking. The marking extending from the posterior border

TABLE 1

INTERSETAL DISTANCE IN SEGMENT XII IN *Digaster gwongorellae*

	mm					st*					dd: u
	aa	ab	bc	cd	dd	aa	ab	bc	cd	dd	
Holotype	0·52	0·35	0·73	0·56	6·80	4·95	3·30	6·93	5·28	64·02	0·64
Paratype 1	0·42	0·21	0·51	0·42	5·85	4·97	2·48	6·01	4·97	68·04	0·68
Paratype 2	0·42	0·27	0·55	0·46	5·14	5·26	3·28	6·79	5·70	63·16	0·63
mean						5·06	3·02	6·58	5·32	65·07	0·65
mean/ab						1·68	1·00	2·18	1·76	21·55	

* Standardized to a periphery (*u*) of 100.

of XVIII into the postsetal portion of XVII and surrounded by a whitish, lower rim which almost reaches the setal arcs of XVII and XIX and expands lateral of the male porophores to *c* lines (H). Male genital field similar in the paratypes but less well developed in P1; indistinct in P2; the genital marking with a distinct median pore equatorially in XVIII in H and P2. Female pore very conspicuous, unpaired, midventral, midway between the setal arc and anterior border of XIV; the segment protuberant in its vicinity. Spermathecal pores visible as 2 pairs of indistinct points immediately behind intersegmental furrows 7/8 and 8/9 in *a* lines, very slightly bowing the intersegments anteriorly (H; P1, 2).

INTERNAL ANATOMY (Holotype and paratype 2; gross anatomy confirmed in P1)

Septa 5/6 thin; 6/7–9/10 increasing from slightly to moderately thick; 10/11–12/13 strongly thickened; 13/14 moderately thickened; the rest thin (H, P2). Dorsal blood vessel single; continuous to the brain over which it ramifies. Dorsoventral commissurals in V–XII; those in V–IX slender and (all?) with parietal branches; those in X–XII forming wide latero-oesophageal hearts, each with a connective from the dorsal and from the supra-oesophageal vessel but otherwised unbranched. Supra-oesophageal in IX–XII. Subneural vessel absent (H, P2). Each of a pair of vessels much ramified dorsally on the pharynx immediately behind the brain passes downwards around the gut, and runs posteriorly as far as XII as a thick paired suboesophageal vessel; a pair of posterior lateroparietal vessels to the prostates originates ventrally from vascularization of the oesophagus in XIII (H).

Oesophagus in V concealed by pharyngeal glands, not dilated and only moderately vascularized. Gizzards two, in VI and VII, fusiform and very strongly muscular, closely abutting and not separated by unmodified oesophagus but clearly demarcated one from the other. Oesophagus in VIII virtually supressed; in IX only slightly dilated and moderately vascularized, in X–XVI (H), XVII (P2) strongly vascularized, and dilated to XVI (H) or XIII (P2); calciferous glands absent. Intestine commencing in XVIII; typhlosole absent (H; P1, 2).

Nephridia: a pair of very small meronephric masses in II, apparently discharging exonephrically at 1/2; a pair of very large meronephric tufts composed of numerous spiral loops in III and IV discharging by several ducts at 2/3 and 3/4; thereafter, to XII, separate

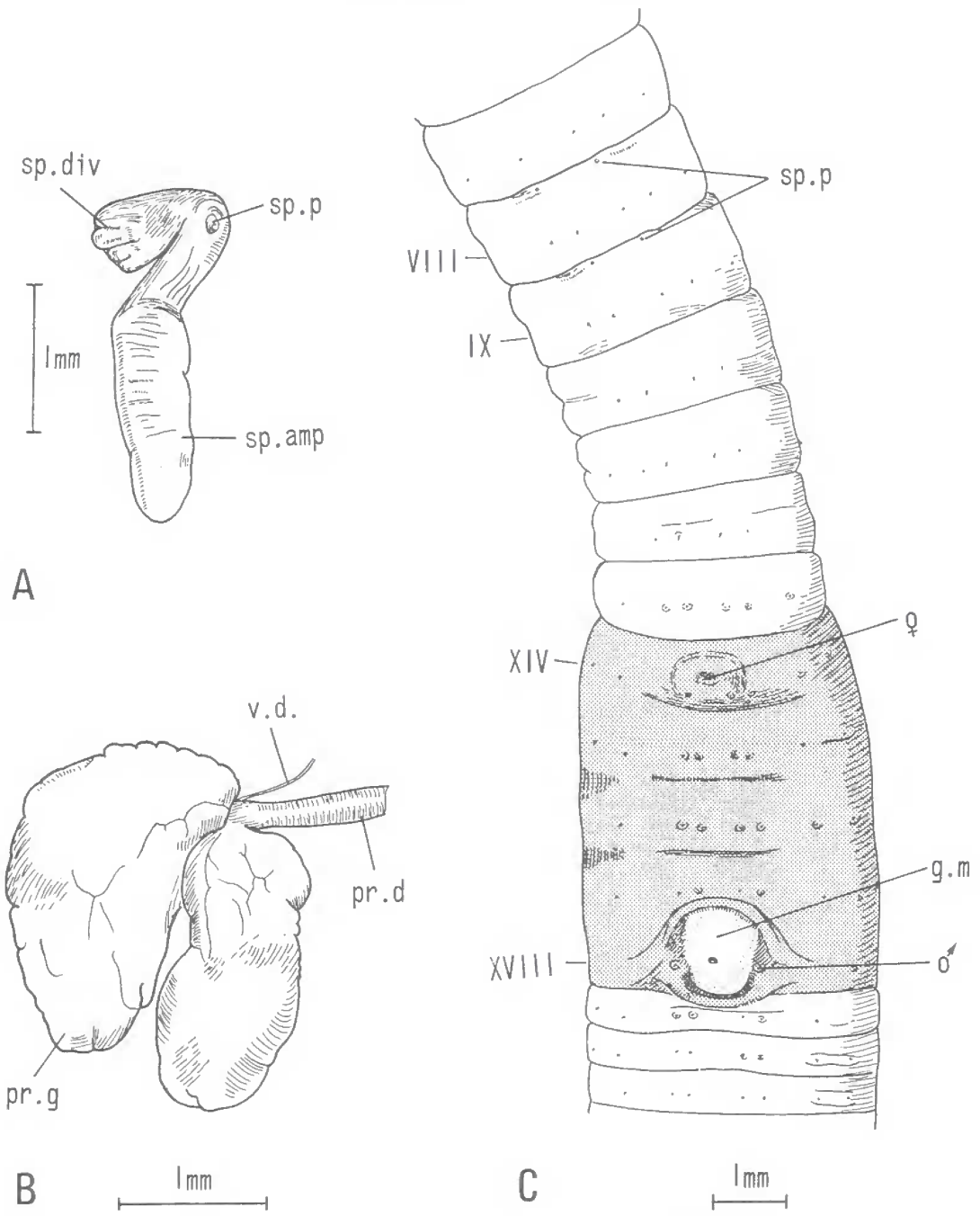

FIG. 1: *Digaster gwongorellae* sp. nov. (holotype) A, right spermatheca of IX; B, prostate gland; C, ventral view of genital segments.

All by camera lucida. ♀, female pore; g.m., genital marking; ♂, male pore; pr. d., prostate duct; pr. g., glandular portion of prostate; sp. amp., spermathecal ampulla; sp. d., spermathecal duct; sp. div., spermathecal diverticulum; sp. p., spermathecal pore; v. d., vas deferens.

exonephric micromeronephridia on posterior septa; these by XIII becoming parietal. Caudally the median nephridium is not appreciably enlarged but a preseptal funnel is present (H, P2).

Small testes and large, multipartite iridescent sperm funnels in X and XI; seminal vesicles in IX and XII; the posterior pair (H) or both pairs (P2) racemose. Prostates racemose, restricted to but expanding XVIII; each gland completely bipartite; the duct straight and muscular entering the body wall in *a* line; vasa deferentia joining the junction of gland and duct. Ovaries (flattened, composed of several egg strings) and thick-lipped funnels in XIII; oviducts almost contiguous on entering the body wall in XIV; ovisacs absent. Spermathecae 2 pairs, in VIII and IX, discharging anteriorly in their segments; each with a narrow elongate ovoid ampulla, a slightly shorter, narrower, clearly demarcated muscular duct and ectally a large diverticulum, wider than the duct and almost as long, with several externally protuberant sperm chambers (H, P2). Length of right posterior spermatheca of holotype = 2·3 mm; ratio of total length: length duct = 2·8; ratio of total length: length diverticulum = 2·5.

Discussion

Digaster gwongorellae is distinguished from all other members of the *lumbricoides* species-group, to which it closely conforms, in the single midventral female pore, in extension of the clitellum through five complete segments, in the form of the male genital field and in location of the first dorsal pore in intersegment 5/6. The bipartite condition of the prostate glands is seen also in *D. bradburyi* and *D. anomala* Jamieson, 1971a. The form of the spermathecae is not especially distinctive, their general form, and particularly the multiloculate diverticulum, being reminiscent of *Digaster minor* Spencer; *D. lamingtonensis* Michaelsen and (outside the *lumbricoides* group) *D. armifera* Fletcher; the diverticulum is, however, more elongate in *D. gwongorellae*.

Inclusion of *Digaster* in the Tribe Dichogastrini Jamieson (1971b) on the grounds of presence of a stomate nephridium median to astomate meronephridia in posterior segments is further validated by the new species.

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